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MAN-MADE FIBRE INDUSTRY IN PAKISTAN*

Prepared by

M.H.Chaudhry**

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** Federal Chemical and Ceramics Corporation Limited, Karachi - Pakistan

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BACKGROUND

The synthetic fibre development began in 1846, with the discovery by Friedrich Schonbein that cellulosic materials could be modified into materials with different properties, when treated with nitric acid. Nitrocellulose was the first man-made fibre and in 1890 the first artificial silk factory was built at Besancon in France to produce "Chardonnet Silk", following the successful experiment by Count Hilarie de Chardonnet in 1878. This first commercial production of artificial fibre became the fore-runner of the modern synthetic fibre industry.

Although nitrocellulose, which is a highly inflameable material, never achieved large scale usage, its discovery led to the development of viscose rayon. After the work of C.F. Cross, E.J. Evan and C. Beadle in England, an English company Courtaulds Limited established in 1904, the first large-scale manufacturing unit for the production of viscose rayon.

For nearly half of a century viscose rayon remained the primary man-made fibre. It is however not a purely synthetic material and the real beginning of the synthetic fibre industry was made with the production of the first 100% synthetic fibre "Nylon", by E.I. du Pont de Nemours and Co., in the United States, based on work of the company research team, led brilliantly by an organic chemist, Wallace H. Carothers.

In 1941, J.T. Dickson and J.R. Whinfield of Calico Printers Association in England first discovered polyester fibre. Polyester fibre, which was produced under licence by ICI Ltd., in U.K., and E.I. du Pont de Nemours in the U.S.A., soon after the 2nd World War, has become the pre-eminent synthetic fibre in the textile industry.

Many other synthetic fibres, including polyacrylonitrile and polyvinyl-chloride have been developed since then, however, polyester fibre has continued to be the most important synthetic fibre and has created a new field of textile due to its fibre blending potential.

In Pakistan, synthetic fibre industry was rather late in developing, since the local textile industry was originally based on home-grown cotton. Pakistan is one of the major cotton growing countries in the world. Cotton together with its processing industry and export of yarns and fabrics makes cotton textile industry the single most important sector of the national economy. Cotton textiles account for about a quarter of the value added in the manufacturing sector and contribute to about 41% of total export earnings. Most of the yarn manufacturers in Pakistan produce 100% cotton yarn in the main and switch over to synthetic fibres only when availability of cotton becomes limited or its price increases to a point, where its use become less economical than synthetics. In the recent years however, use of synthetic fibres has grown steadily and over 70,000 tons per annum of synthetic fibres are used in Pakistan.

SYNTHETIC FIBRE INDUSTRY IN PAKISTAN

Synthetic Fibre industry in Pakistan began in 1964, when the first acetate

rayon filament plant went into operation. Thereafter a number of very small nylon filament yarn plants were set up, but as in the case of acetate yarn, nylon never made real in-roads into Pakistan's textile industry. First entry of polyester was also in the form of filament yarn produced in large on the converted nylon plants, using imported polyester chips. However, by early 1970s polyester filament yarn and later staple fibre became the dominant synthetic fibre in Pakistan. With this in view, plans for setting up both polyester filament yarn and polyester staple fibres were taken up in earnest and in 1982 the country's largest and the first integrated plant producing both staple fibre and filament yarn using basic raw materials, became operational. The plant, National Fibres Limited, a company operated by the state-owned Federal Chemical & Ceramics Corporation Limited, has the capacity to produce 12,000 tons per annum of staple fibre and 3,000 tons per annum of draw texturized filament yarn. In addition the plant has a capacity to produce 18,000 tpa of polyester chips, which not only fulfills the plant's own demand, but leave sufficient surplus for sale to other polyester fibre manufacturers. In 1983 another polyester staple fibre plant also with a capacity of 12,000 tpa was set up by ICI. In the meantime, several smaller filament yarn plants were installed, the total installed capacity is around 14,000 tpa. Plans for more filament yarn and staple fibre plants have already received Government permission, will soon become operational, making Pakistan self-sufficient in its requirements for polyester fibre.

USE OF POLYESTER-VISCOSE BLENDS IN PAKISTAN

While the use of polyester fibre in Pakistan has continued to grow, a rather paradoxical situation has risen in the country's textile sector. Pakistan is one of the major cotton-growing countries in the world and it would be expected that the most important segment of textile industry

would be of polyester-cotton blended fabric, the actual situation is the reverse of this and there is hardly any cotton-polyester blends being produced in Pakistan. On the other hand there is a great deal of production of polyester-viscose rayon blends, which is to the determent of the local economy, since there is no production of viscose rayon in Pakistan and its total requirement has to be imported.

The reasons for the use of polyester-viscose blends at the expense of polyester-cotton blends in Pakistan is not very hard to find. Polyester--viscose blended yarns are far easier to produce and a mill owner is able to make a convenient product in polyester-viscose at a cost lower than a polyester-cotton blend in a 65/35 ratio at the current prices of raw materials, taking into account the cotton waste losses at blowroom, carding and combing operation and a 25% lower through-put at ring spinning caused by lower spindle speeds and higher twist multipliers for polyester cotton blends. Moreover, the majority of textile mills in Pakistan do not have the machinery for combing of cotton, which is an essential process for polyester cotton blended yarn. Another advantage of producing polyester viscose blends is the ease of manufacture and strict control of parameters, which is possible with the machine made viscose fibre.

This situation is likely to continue as long as Pakistan's textile industry is dominated by spinners, rather than weavers and end-users. I would like to mention here that in Pakistan the textile industry has fragmented itself into a handful of state-of-art integrated mills, spinning units (the so-called textile mills) and an enormous number of small establishments, with about 20 looms each, who weave about 85% of the total cloth produced. In the virtual absence of integrated mills and specialised weaving units, the spinners will continue to have his way, since small weavers have little say in choice of yarns and is happy to use whatever

raw-material is offered to him at the lowest cost.

This is unfortunate, because not only the country is spending foreign exchange in importing viscose rayon, rather than using home-grown cotton but the consumer is burdened with an inferior product. As is well known polyester viscose blended fabrics cannot match with polyester cotton fabrics as personal wear apparels in comfort. Even in the European countries where cotton is not grown, large quantities of cotton are imported for producing polyester-cotton garments and viscose which is locally produced is not used as the cheap and inferior substitute. Viscose has many of the attributes that the cotton fibre has, but due to the orientation of the viscose, combined with the absorption properties of the viscose fibre, the wet strength is reduced, whereas in cotton, the wet strength is increased with absorption of moisture. Viscose fibres can loose upto half its strength when wet and is therefore more easily stretched, this affects the dimensional stability of the garment during washing. Polyester-cotton garments, therefore has far superior dimension stability as compared to polyester-viscose blends.

Another important factor which makes polyester viscose fabrics inferior to polyester-cotton blends is viscose rayon's ability to 13% moisture, as against 7% of cotton. The time of retention of moisture in the viscose blended garments is greater than in cotton and in humid climates the viscose blends tend to feel clammy against the skin. Moreover, polyester-cotton garments have a more natural finished fibre appearance, which polyester-viscose fabrics have a finish that looks artificial. Polyester-viscose fabrics are also more prone to the pilling effect, when small pills are formed on the fabric when rubbing against other garments take place.

REASONS FOR THE USE OF POLYESTER VISCOSE BLEND

Despite all these disadvantages, polyester-viscose fabrics continue to dominate the blended fabric market in Pakistan. The reason for this is the fact that not many consumers know the difference between polyester-viscose garments which are passed on to customers as polyester--cotton fabrics. Since labelling of garments, giving details of fibres used is not mandatory in Pakistan, a customer has no way of finding the truth. During a marketing survey carried out, this fact was brought to light as most of the consumers buying polyester-viscose garments thought these to be polyester-cotton blends. The users did complain of the pilling problem, the reduced life of the fabrics and the uncomfortable feeling in wearing this garments. However, the consumers put these defects down to "inferior" production by local manufacturers, compared with "superior" garments they had purchased from foreign suppliers. They were totally unaware that they were actually comparing locally produced polyester-viscose blends with imported polyester cotton blends and that the lower quality of local products was not due to poor workmanship but due to the use of inferior blends.

In Pakistan, an isolated polyester-viscose fabric market has been created where the consumer does have a choice of fabric quality. This artificial market has been created by the spinning mills, for whom it is profitable to produce polyester viscose blends. The spinners who are controlling the market, dictating the down stream products, have no qualms about passing an inferior product on to the consumers, as long as it is profitable to them, the spinners.

STEPS FOR ESTABLISHING POLYESTER-COTTON BLENDS IN PAKISTAN

There is thus a need to enlighten the consumers and to protect their

needs, as in the developed countries so that an independent choice of fabric could be made even through trial and error, when readymade garments carry identification labels of fabric quality and blend ratios. It is only through consumer awareness that the domination of spinning mills in determining the choice of blended fabric will end.

We, as the major polyester fibre producers in Pakistan, are making strenous efforts to provide the Pakistan consumers with the best product at the most economical prices. To achieve this aim we are bringing to the notice of our Government a number of anamolies which have loaded the dice in favour of spinning mills and to the proliferation of polyester-viscose blends, which is of course to the deteriment to the consumer. Production of polyester-viscose blends require imports of about 20,000 tons per annum of viscose staple fibre at a foreign exchange expenditure of about Rs.400 million per annum. Which, in view of the many disadvantages listed above of manufacturing viscose blends in Pakistan, is a wastage of foreign exchange. Manufacture of polyester--cotton blends has to be encouraged at the cost of polyester-viscose blends, as there is sufficient availability of Pakistan cotton in 27.5 mm staple length and above, which is suitable for blending with polyester, to make good quality shirts, sheets, pillow cases, curtains and ladies summer-wear dress materials. Since there is no export market for polyester-viscose blended fabrics, the export potential of the local textile industry is hampered to a large extent and is limited only to 100% cotton products. With the production of polyester cotton blends a whole new export market for blended fabrics will be opened for the country's textile industry. A number of neighbouring countries like India have large export markets for their polyester cotton blended fabrics.

A national policy has to be developed to establish the polyester cotton market. The spinners should be made to take responsibility of the quality

of yarn produced. not in terms strength and length of yarn for the cloth manufacturer, but in terms of overall fabric quality. The expansion of the textile industry should be to include weaving, dyeing and finishing departments for the large number of independent spinning mills in the country and not merely to expand the spinning capacity in the same mill or to establish more individual spinning units.

Such programme of development will result in :-

1. The production of fabrics more suitable for the Pakistan market.

2. The stimulated growth of the cotton agricultural system.

3. Creating a more quality conscious market in cotton-polyester yarns and fabrics for domestic and export purposes.

4. Creating an enormous saving in foreign exchange with the absence of viscose.

5. Creating a possible export market with foreign exchange earnings.

6. Creating a more stable market that will import the textile industry as a whole.

7. Providing more jobs with profitable growth of the textile industry in Pakistan.

It is encouraging that the Government has begun to respond to our efforts and we hope that the existing anamolous situation in the blended fabric market will soon be rectified.

SYNTHETIC FIBRES TECHNOLOGY CENTRE

While the immediate problem of the synthetic fibre industry in Pakistan have been identified and efforts are being made to improve the situation. There is still a need to improve the over-all quality of synthetic fibres and to provide industry oriented application activity to improve the synthetic fibre industry in Pakistan.

With this end in view, Federal Cheical & Ceramics Corporation Limited, in collaboration with UNIDO/UNDP, is planning to set up a synthetic fibre technology Centre under the name of Synthetic Fibre Development and Application Department (SFDAD) at Karachi. It is hoped the proposed Centre, which is likely to be established by January 1987, will provide substantial and meaningful help to the synthetic fibre industry in Pakistan.